

IN THE CLAIMS

This listing of claims will replace all prior versions, and listings, of claims in the application:

1. (Currently Amended) A program storage device readable by a computer,  
2 the program storage device ~~medium~~ tangibly embodying one or more programs of  
3 instructions executable by the computer to perform a method for determining a size of a  
4 last data block processed in a storage system , the method comprising:  
5 detecting ~~a characteristic of~~ a data channel gate signal ~~indicating a length of data;~~  
6 initiating a counter for counting to a predetermined count upon detection of the  
7 gate signal;  
8 resetting the counter each time the predetermined count is reached;  
9 deasserting the gate signal a programmable length before the end of the last data  
10 byte;  
11 stopping the counter upon deassertion of the gate signal; and  
12 ~~determining the length of data based on the detection of the characteristic; and~~  
13 ~~calculating a size of a last data block in the length of data based on the determined~~  
14 length according to a remainder in the counter after the counter is stopped.
  
1. 2. (Original) The program storage device of claim 1, wherein the  
2 detecting the characteristic of the data channel gate signal further comprises detecting a  
3 transition of a read-gate signal and a write-gate signal for indicating the last data block in  
4 the length of data.

1           3. (Original)   The program storage device of claim 2, wherein the  
2   detecting the transition of the write-gate signal further comprises detecting a de-assertion  
3   of write-gate signal  $M1$  bytes before the end of a data sector being written to provide the  
4   size of the last data block ( $R$ ), the size of the last data block ( $R$ ) equals MOD ( $K+M1, L$ ),  
5   wherein  $K$  is a determined length count number,  $K+M1$  equals the sector size  $N$  and  $L$   
6   equals a codeword size.

1           4. (Original)   The program storage device of claim 2, wherein the  
2   detecting the transition of the read-gate signal further comprises detecting a de-assertion  
3   of read-gate signal  $M2$  bytes before the end of a data sector being read to provide the size  
4   of the last data block ( $R$ ), the size of the last data block ( $R$ ) equals MOD ( $K+M2, L$ ),  
5   wherein  $K$  is a determined length count number,  $K+M2$  equals the sector size  $N$  and  $L$   
6   equals a codeword size.

1           5. (Original)   The program storage device of claim 2 further comprising  
2   decoding the last data block after reading the last data block from a medium.

1           6. (Original)   The program storage device of claim 5, wherein the  
2   decoding the last data block further comprises using parity post-processing and run-  
3   length-limited decoding schemes.

1           7. (Original)   The program storage device of claim 1, wherein the  
2   calculating the size of a last data block further comprises calculating a modulo (MOD) of  
3   sector size ( $N$ ) and codeword size ( $L$ ) to provide the size of the last data block ( $R$ ),  
4   wherein the size of the last data block ( $R$ ) equals MOD ( $N, L$ ).

1           8. (Original)   The program storage device of claim 1 further comprising  
2   encoding the last data block before writing the last data block to a medium.

1           9. (Original)   The program storage device of claim 8, wherein the  
2   encoding the last data block further comprises using parity and run-length-limited  
3   encoding schemes.

1           10. (Original)   The program storage device of claim 1 further comprising  
2   applying parity encoding/decoding on the last data block without padding additional  
3   bytes.

1           11. (Currently Amended) A read/write channel device comprising:  
2            a signal processor for detecting a characteristic of a data channel gate signal  
3            indicating a length of data the gate signal being deasserted a programmable length before  
4           the end of the last data byte; and  
5            a counter ~~for determining the length of the data based on the detection of the~~  
6           characteristic for counting to a predetermined count upon detection of the gate signal, the  
7           counter being reset each time the predetermined count is reached and stopped upon  
8           deassertion of the gate signal; the counter providing a and for calculating the size of a last  
9           data block in the length of data based on the determined length according to a remainder  
10          in the counter after the counter is stopped.

1           12. (Original)   The read/write channel device of claim 11, wherein the  
2           signal processor further comprises a read-gate and a write-gate for indicating the last data  
3           block in the length of data.

1           13. (Original)   The read/write channel device of claim 12, wherein the  
2           write-gate provides a signal  $M1$  bytes before the end of a data sector being written to  
3           provide the size of the last data block ( $R$ ), the size of the last data block ( $R$ ) equals MOD  
4           $(K+M1, L)$ , wherein  $K+M1$  equals the sector size  $N$  and  $L$  equals a codeword size.

1           14. (Original)   The read/write channel device of claim 12, wherein the  
2    read-gate provides a signal  $M2$  bytes before the end of a data sector being read to provide  
3    the size of the last data block ( $R$ ), the size of the last data block ( $R$ ) equals MOD ( $K+M2$ ,  
4     $L$ ), wherein  $K+M2$  equals the sector size  $N$  and  $L$  equals a codeword size.

1           15. (Original)   The read/write channel device of claim 11 further  
2    comprising a decoder for decoding the last data block after reading the last data block  
3    from a medium.

1           16. (Original)   The read/write channel device of claim 15, wherein the  
2    decoder further comprises a post-processor for providing parity post-processing and a  
3    channel decoder for providing run-length-limited decoding schemes.

1           17. (Original)   The read/write channel device of claim 11, wherein the  
2    counter calculates a modulo (MOD) of sector size ( $N$ ) and codeword size ( $L$ ) to provide  
3    the size of the last data block ( $R$ ), wherein the size of the last data block ( $R$ ) equals MOD  
4    ( $N, L$ ).

1           18. (Original)   The read/write channel device of claim 11 further  
2    comprising an encoder for encoding the last data block before writing the last data block  
3    to a medium.

1           19. (Original)   The read/write channel device of claim 18, wherein the  
2    encoder further comprises a channel encoder and a parity encoder for providing parity  
3    and run-length-limited processing.

1           20. (Original)   The read/write channel device of claim 11 further  
2    comprising an encoder/decoder for applying parity on the last data block without padding  
3    additional bytes.

1           21. (Currently Amended) A storage system for determining sector block sizes  
2 using existing controller signals, comprising:  
3           a storage medium for storing data thereon, the storage medium formatted for a  
4 predetermined sector length;  
5           a transducer, operatively coupled to the storage medium, for reading and writing  
6 data on the storage medium; and  
7           a read/write channel device for determining a size of a last data block, comprising  
8           a signal processor for detecting ~~a characteristic of~~ a data channel gate  
9 signal indicating a length of data the gate signal being deasserted a programmable length  
10 before the end of the last data byte; and  
11           a counter ~~to determine the length of the data based on the detection of the~~  
12 ~~characteristic for counting to a predetermined count upon detection of the gate signal, the~~  
13 ~~counter being reset each time the predetermined count is reached and stopped upon~~  
14 ~~deassertion of the gate signal; the counter providing a and to calculate the size of the a~~  
15 ~~last data block in the length of data based on the determined length according to a~~  
16 ~~remainder in the counter after the counter is stopped.~~

1           22. (Original) The storage system of claim 21 further comprising a  
2 storage controller for generating both a write-gate signal and a read-gate signal to the  
3 read/write channel, and for generating NRZ data to read/write channel for writing and for  
4 receiving NRZ data from read/write channel for reading.

1           23. (Original)   The storage system of claim 21, wherein the signal  
2   processor further comprises a write-gate and a read-gate for indicating the last data block  
3   in the length of data.

1           24. (Original)   The storage system of claim 23, wherein the write-gate  
2   provides a signal  $M1$  bytes before the end of a data sector being written to provide the  
3   size of the last data block ( $R$ ), the size of the last data block ( $R$ ) equals MOD ( $K+M1, L$ ),  
4   wherein  $K+M1$  equals the sector size and  $L$  equals a codeword size.

1           25. (Original)   The storage system of claim 23, wherein the read-gate  
2   provides a signal  $M2$  bytes before the end of a data sector being read to provide the size  
3   of the last data block ( $R$ ), the size of the last data block ( $R$ ) equals MOD ( $K+M2, L$ ),  
4   wherein  $K+M2$  equals the sector size and  $L$  equals a codeword size.

1           26. (Original)   The storage system of claim 21 further comprising a  
2   decoder for decoding the last data block after reading the last data block from a medium.

1           27. (Original)   The storage system of claim 26, wherein the decoder  
2   further comprises a post-processor for providing parity post-processing and a channel  
3   decoder for providing run-length-limited decoding schemes.

1           28. (Original)   The storage system of claim 21, wherein the counter  
2   calculates a modulo (MOD) of sector size ( $N$ ) and codeword size ( $L$ ) to provide the size  
3   of the last data block ( $R$ ), wherein the size of the last data block ( $R$ ) equals MOD ( $N, L$ ).

1           29. (Original)   The storage system of claim 21 further comprising an  
2    encoder for encoding the last data block before writing the last data block to a medium.

1           30. (Original)   The storage system of claim 29, wherein the encoder  
2    further comprises a channel encoder and a parity encoder for providing parity and run-  
3    length-limited processing.

1           31. (Currently Amended) A means for determining the size of a last data  
2   block processed in a storage system comprising:  
3           means for detecting a characteristic of a data channel gate signal indicating a  
4   length of data;  
5           means for determining the length of data based on the detection of the  
6   characteristic; and  
7           means for calculating the size of a last data block in the length of data based on  
8   the determined length  
9           means for detecting a data channel gate signal;  
10          means for initiating a counter for counting to a predetermined count upon  
11   detection of the gate signal;  
12          means for resetting the counter each time the predetermined count is reached;  
13          means for deasserting the gate signal a programmable length before the end of the  
14   last data byte;  
15          means for stopping the counter upon deassertion of the gate signal; and  
16          means for calculating a size of a last data block according to a remainder in the  
17   counter after the counter is stopped.

1           32. (Currently Amended) A method of determining a size of a last data block  
2        processed in a storage system comprising:  
3           ~~detecting a characteristic of a data channel gate signal indicating a length of data;~~  
4           ~~determining the length of data based on the detection of the characteristic; and~~  
5           ~~calculating a size of a last data block in the length of data based on the determined~~  
6        ~~length~~  
7           detecting a data channel gate signal;  
8           initiating a counter for counting to a predetermined count upon detection of the  
9        gate signal;  
10          resetting the counter each time the predetermined count is reached;  
11          deasserting the gate signal a programmable length before the end of the last data  
12        byte;  
13          stopping the counter upon deassertion of the gate signal; and  
14          calculating a size of a last data block according to a remainder in the counter after  
15        the counter is stopped.